

## A Study of some Neotropical Ants of Genus *Pheidole* Westwood. I. (Hymenoptera: Formicidae)

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For the purpose of building a key for the 60 and more species of *Pheidole* occurring in São Paulo State and of identifying as many as possible of the species accumulated over the years in my collection, I recently spent several weeks in reading up on the pertinent literature and in studying the diagnostic characters of the different groups and forms. Although this attempt did not lead by any means to a full mastery of the difficult genus, represented in the Neotropics alone by 201 species, 88 subspecies and 119 varieties, it resulted nevertheless in the discovery of several new species and two new synonyms which are presented below, and in the recognition of two other rare species already described. It is recognized that due to the often deficient descriptions and the lack of the respective type material, a great risk is taken in proposing new forms in this huge genus. However, inasmuch as the three new species proposed below present each some unusual features, which should have been mentioned even in the most superficial and careless diagnosis, it appears reasonably safe to describe them as new to science.

This paper is gratefully dedicated to my confrere Father Thomas Borgmeier, O.F.M., upon his eightieth birthday, and in recognition for all he has done for building up my entomological career.

**Acknowledgments.** My heartfelt thanks go to the assiduous collectors F. Plaumann, Karol Lenko, Carlos Evers Q., Carlos Alberto Campos Seabra, for the specimens submitted, to the "Conselho Nacional de Pesquisas" for the continuation of the fellowship, under which this study was performed, to the "Fundação de Amparo à Pesquisa do

Estado de São Paulo", donor of a new Zeiss IV Zoom stereoscopic microscope, which was used in this investigation.

### *Pheidole bambusarum* Forel

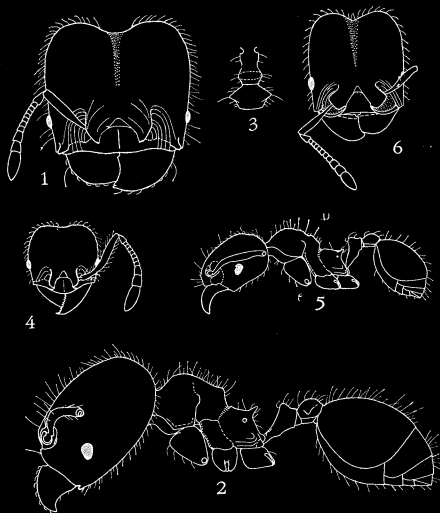
*Pheidole bambusarum* Forel, 1908: 376-377 (Soldier, worker, female; Brazil, São Paulo State: São Paulo). Forel, 1911: 304 (Brazil, São Paulo State: Alto da Serra, Paranapiacaba). Forel, 1912: 225 (Brazil, Rio de Janeiro State). Luederwaldt, 1918: 44. Luederwaldt, 1926: 278 (Biol.).  
*Pheidole ogloblini* Kusnezov, 1951: 64, 85-88 (Soldier, worker, female; Argentina, Misiones: Yacuy, Manuel Belgrano). Nov. Syn.

The description of *ogloblini* agrees entirely with *bambusarum* specimens from São Paulo and identified by Forel (collections of the Museu de Zoologia da Universidade de São Paulo, MZUSP, and of author, WWK), so that there is no doubt about the presently proposed synonymy.

This plant-inhabiting and medium-sized species is distinct by its yellow color, the coarsely reticulate-rugose head and thorax, the subglobose postpetiole, the abundant long hairs. In the soldier, the head is subquadrate, the sides are subparallel, the occipital incision deep; the prominent paired median gular teeth are about as close to each other as to the lateral ones; frontal carinae slightly raised with the free apex obtusely angulate or rounded. The closest relative appears to be *lutzi* Forel, another bamboo-inhabiting species; but the soldier of the latter has a much longer head, more widely spaced median gular teeth which have a third tooth between them, the broader and laterally obtusely angulate postpetiole; the worker is completely different by having the head and thorax reticulate-punctate and opaque, lacking the coarse reticulate-rugose macrosculpture.

**Material seen:** Brazil, São Paulo State: Estação Alto da Serra, 1910, H. Luederwaldt, H. von Jhering leg. (MZUSP 15.350, 15.526; Borgmeier collection, CTB 2037, 2040); same locality, March 1913, E. Schwebel leg. (MZUSP 17.560, CTB 2377); Serra da Cantareira, R. von Jhering leg. (MZUSP 21.111, CTB 2482); Rio de Janeiro State: Nova Friburgo, Mury, June 1st, 1960, H. Sick leg. (WWK 3548).

**Biology.** The types were found in the hollow bamboo ("in den grossen Bambusroehren des Waldes bei São Paulo"), so were the specimens taken by Sick near Nova Friburgo. Luederwaldt (1926: 278) says that nests are sometimes found inside the cavity of bamboo, established within several succeeding sections with the internodes perforated. The population are always numerous. According to Kusnezov (1951: 87), the nest of *ogloblini* "estaba situado en el hueco de una caña, con un diámetro interior de cerca de 3 cm; hormigas con su cría dentro del detrito vegetal". The same author states that the number of specimens in the nest of the *ogloblini* types was of 769 individuals, viz, 662 workers, 109 soldiers and 1 dealate queen.



Figs. 1-5: *Pheidole dyctiota* n. sp.: 1. soldier, head in full-face view; 2. soldier, body in profile; 3. soldier, pedicel in dorsal view; 4. worker, head in full-face view; 5. worker, body in profile. Fig. 6. *Pheidole vallifica* For., soldier, head in full-face view (drawn to a smaller scale than figs. 1-5) (Kempf del.)

***Pheidole dyctiota* n. sp.**

(Figs. 1-5)

**Soldier** (holotype). Total length 4.0 mm; head capsule length 1.13 (1.00-1.20) mm; head width 1.19 (1.05-1.27) mm;

scape length 0.48 (0.46-0.54) mm; Weber's length of thorax 0.97 (0.89-1.08) mm; hind femur length 0.65 (0.62-0.70) mm; hind tibia length 0.51 (0.46-0.54) mm; hind tarsus I length 0.43 (0.38-0.46) mm. Reddish brown; antennal funiculi and legs yellowish brown; chewing border of mandibles and anterior border of clypeus black. Long hairs (see figures for fringing hairs) abundant, erect or suberect on dorsum of head, on dorsum and sides of thorax (mesopleura included), oblique on petiole, post-petiole, gaster, gular face of head, antennal funiculi, and legs; antennal scapes with both short oblique hairs and a few long erect hairs on upper surface; appressed pubescence absent, also on gaster.

Head (Figs. 1, 2) subquadrate, slightly broader than long, with subparallel and anteriorly slightly converging sides; occipital impression between little prominent lobes relatively deep, prolonged forward as a shallow sagittal furrow fading out on front. Anterior border of clypeus nearly straight, scarcely excised in the middle; the median apron smooth and shining with a low sagittal keel. Frontal area impressed. Frontal carinae widely separate, diverging in front, subparallel behind. Anterior border of cheeks, laterally of mandibular insertions, with a sharply marginate and raised carina which forms a prominent tubercle above at the junction with the lateral portions of clypeus. Antennal grooves deeply impressed, not prolonged caudad; antennal scrobe absent. Two lateral and three mesial gular teeth present; the mesio-lateral ones closer to the laterals than to each other. Integument finely and superficially reticulate-punctata, quite shining; coarsely reticulate-rugose on dorsum of head and cheeks, the rugae becoming obsolete on posterior portions of sides of head and occipital lobes and on gular face. Antennal grooves with 4-5 arched rugulae. A few short rugae, converging caudad on front, originating from the frontal carinae. Eyes small, no more than 9 facets across the greatest diameter, moderately convex, on anterior third of total head length. Mandibles stout, strongly curved, coarsely rugose basally on sides, the rest smooth and shining. Apical and subapical tooth subequal, relatively small; rest of chewing border practically edentate. Antennal scapes finely rugulose, attenuate at base, strongly curved at anterior third, the remaining two thirds uniformly incrassate after the curvature. Funicular club (segments 9-11) as long as the basal portions of funiculus; segments 2-8 not longer than broad.

Thorax (Fig. 2) thickset, shorter than head. Pronotum with marked yet not tuberculate humeri, nearly as broad across humeri as across the antero-inferior angles. Promesonotal suture vestigial. Mesonotum with a subhorizontal longer basal and a subvertical shorter declivous face, the angle formed between the two in profile representing the scarcely protruding mesonotal welt; transverse mesonotal groove vestigial to absent. Metanotal groove impressed. Basal face of epinotum about as long as declivous face. Epinotal spines obliquely raised, slightly diverging laterad and caudad, as long as half the basal face. Integument showing smooth and shining patches on sides of pronotum, nearly the entire mesopleura, and the declivous face of epinotum; promesonotum superficially reticulate-punctate and reticulate-rugose but not quite as coarsely as dorsum of head; basal face of epinotum with faint transverse costulae; sides of mesonotum and posterior portions of sides of thorax more densely reticulate-punctate and subopaque; the latter with a few longitudinal rugae. Legs smooth and shining.

Petiole (Fig. 3) with the usual depressed anterior peduncle and a posterior, in profile narrowly rounded and transversely not excised, node; ventrolaterally finely reticulate-punctate; dorsally mostly smooth and shining. Postpetiole very finely punctured anteriorly and ventrally, but quite shining; its sides with prominent conical processes, the segment itself much broader than long. Gaster not visibly truncate in front, entirely smooth and shining.

Worker (paratypes). Total length 2.3 mm; head capsule length 0.54-0.59 mm; head width 0.57-0.62 mm; scape length 0.46-0.49 mm; Weber's length of thorax 0.70-0.73 mm; hind femur length 0.51-0.54 mm; hind tibia length 0.38-0.40; hind tarsus I length 0.30-0.32 mm. Reddish brown; mandibles, funiculi, legs dark yellowish brown; gaster occasionally of the same color, more often infuscated. Pilosity as in soldier.

Head (Figs. 4, 5) subquadrate, about as long as broad, occipital corners rounded, occipital margin slightly notched in the middle; occipital flange invisible in full-face view. Median apron of clypeus with a sagittal keel flanked on each side by two longitudinal costulae. Integument (except for the antennal grooves which present the usual arched costulae) finely reticulate-punctate and subopaque, with superimposed sparse rugae on dorsum of head, which are longitudinal to slightly diverging on front and on vertex, but become fainter and more irregular

with frequent anastomoses laterally and behind. Eyes small, gently convex, with about 6 facets across the greatest diameter. Mandibles mostly smooth and shining, with striato-rugose lateral face; chewing border with distinct apical and subapical tooth and a series of over 10 small denticles basad. Scapes reticulate-punctate and rugulose, their apex not conspicuously surpassing the occipital border when laid back over the head as much as possible. Funicular segments 2-8 rather broader than long, apical club (segments 9-11) somewhat longer than the preceding segments combined.

Thorax (Fig. 5) reticulate-punctate throughout. Pronotum without marked humeri, broader below across the anterior-inferior corner than above, its dorsum weakly reticulate-rugose. Mesonotum with feebly impressed transverse groove and inconspicuous transverse welt, presenting a few transverse rugulae. Metanotal groove impressed. Basal face of epinotum with a longitudinal furrow which is traversed by faint transverse rugulae. Epinotal spines short, obliquely raised and somewhat diverging, shorter than half the length of basal face. Legs smooth and shining.

Petiole and postpetiole (Fig. 5) reticulate-punctate below and on sides, also posterior face of petiolar node. Postpetiolar node not broader than long, subpyriform in dorsal aspect. Gaster smooth and shiny.

**Female** (paratypes). Total length 4.3 mm; head capsule length 0.86-0.95 mm; head width 1.00-1.08 mm; scape length 0.49-0.54 mm; Weber's length of thorax 1.29-1.38 mm; hind femur length 0.67-0.76 mm; hind tibia length 0.51-0.59 mm; hind tarsus I length 0.46-0.49 mm. With all the distinctive features of the soldier, excepting the peculiarities of the caste. Note the following:

Head smaller and always distinctly broader than long; occipital excision shallower, not extending forward over the head as a narrow sagittal groove; compound eyes large, their maximum diameter about one fifth of total head length; ocelli present. Scutum of mesonotum weakly longitudinally rugose but quite shining; scutellum smooth and shining on disc, reticulate-punctate and opaque laterally and behind. Epinotum with a short basal face, prominent triangular epinotal teeth; both basal and declivous face with transverse costulae. Postpetiole with longer lateral conical process on each side, its apex bluntly rounded, its length variable. Gaster distinctly truncate anteriorly, smooth and shining, with a short patch of reticulate-punctate sculpture

in front on tergum I next to postpetiolar insertion. Wings unknown.

**Types.** Brazil, Santa Catarina State: Nova Teutônia, August 1959, F. Plaumann leg. 15 soldiers (holotype and paratypes), 11 workers and 4 dealate females (paratypes) (WWK 3729); same locality and collector at different dates, October 1957, January 1963, May 4, 1963, and January 1967, 4 soldiers, 1 worker, 2 females (WWK 3714, 3741) (paratypes); São Paulo State: Serra dos Agudos Grandes, November 1963, F. Plaumann leg., 1 soldier, 1 worker, 1 female (paratypes) (WWK 3936, 3938); Guanabara State: Rio de Janeiro, Floresta da Tijuca, December 16, 1959, C. A. Campos Seabra leg., 1 soldier and 1 female (paratypes). The material taken by Plaumann comes from sifted leaf-mold. All types in WWK collection, some of them to be distributed elsewhere.

**Discussion.** The present species belongs to the *guillemimueleri*-group and is closest to *risi* Forel. The soldier differs from the latter in smaller size, much shorter head, smooth clypeus, shape of frontal carinae, which lack a free lobe antero-laterally, but diverge obliquely laterad immediately after their origin; in addition, the tubercle formed by the junction of anterior carina of cheeks and the lateral lobes of the clypeus is much stronger and protruding in *dycliota*, which also lacks any trace of antennal scrobe, longitudinal rugae on vertex, transverse rugae on pronotum; and the smoothness of the occipital lobes.

The worker of *dycliota* is at once distinct from *risi* by its completely sculptured and subopaque head and thorax.

**Variation.** The range of the meristic characters has already been given above in the description. Otherwise, the type specimens are very much alike. The holotype soldier is on the light side of coloration, most of the others are quite fuscous-brown with reddish hues. The mesonotal impression and welt in soldiers varies from faintly present to totally absent.

### ***Pheidole gibba* Mayr**

*Pheidole gibba* Mayr, 1887: 590, 604 (Soldier, worker; Brazil, Santa Catarina State). Borgmeier, 1937: 233, figs. 15, 16, 21 (Soldier; Brazil, Santa Catarina; Gaspar).  
*Pheidole gibba* var. *lopesi* Borgmeier, 1937: 233 (Soldier, worker; Brazil, Guanabara: Rio de Janeiro, Corcovado). Nov. Syn.

This species, a close ally of *crassipes* and *tristis* (olim: *emeryi*), seems to be less frequent than the latter two, but shares with them the habit of nesting in rotten wood in relatively moist forests.

The soldier is distinct by the cephalic sculpture (rugae between frontal carinae and sides of head strikingly obliquely transverse), the much stronger pronotal gibbositities, the longer

antennal scapes (tip closer to occipital border than to posterior margin of eyes when laid back over the head as much as possible); the smoother and shinier tergum I of gaster (reticulate-punctate sculpture faint to obsolete on anterior half).

The worker is even more different by the narrowly rounded and slightly drawn out occiput that bears a protruding collar-like flange around the occipital foramen, visible in full-face view. The dorsum of head is smooth and shining, bears no longitudinal rugae except for a few arched ones around the antennal socket. Pronotal tubercles as prominent as in soldier.

**Material examined:** Brazil, Santa Catarina State: Gaspar, M. S. Fontes leg. (CTB 4042); Blumenau, January 19, 1972, in rotten log, W. W. Kempf, leg. (WWK 7026); São Paulo State: São Paulo city, Burla leg. (CTB); Caraguatatuba, April 14, 1962, K. Lenko leg. in rotten wood (MZUSP 2196); Ilha dos Búzios, October 21, 1963, April 3, 1964, K. Lenko leg. in rotten wood (MZUSP 3002, 3607); Guanabara State: Rio de Janeiro, Corcovado, August 1925, H. S. Lopes leg. in rotten wood (CTB 5764, types of var. *lopesi*).

**Synonymy.** The comparatively abundant material presently at hand shows that the variety *lopesi* (nov. syn.) is based on characters that vary within the same nest series, and must be considered a plain synonym of the typical form.

### ***Pheidole vallicifica* Forel**

(Fig. 6)

*Pheidole vallicifica* Forel, 1901: 357-358 (Soldier, worker; Colombia, Sierra Nevada de Santa Marta: San Antonio, 1000 m).

This unusual species, strikingly distinct in the soldier caste by the prominently lobed frontal carinae and the carinate, raised postero-lateral border of clypeus (as in *Tetramorium*, cf. Fig. 6), was hitherto known only from type material collected by Forel himself in northern Colombia. Material accumulated in my collection over the years, shows that it is widely dispersed in the Neotropics:

Honduras: La Lima, January 19, 1960 and August 10, 1969, C. Evers Q. leg. from soil in banana fields, many soldiers and workers (WWK 6872, 6882).

Suriname: Paramaribo, April 1959; Dirkshoop, May 1959; Tambahredjo, June 1959; Sidoredjo, July 1959; La Pouille, August 1959; Poeroe man kemisa, September 1959; Vank, October 1959;



many isolated workers and a few soldiers and a dealate queen taken in pitfall traps and in a few soil samples, principally from sandy pastures and cultured fields, but also from primary forest, J. van der Drift leg. (WWK).

Argentina: Tucumán, December 1957, N. Kusnezov leg. 1 dealate queen (WWK).

According to notes sent by Evers (in litt.), in Honduras this species was discovered as the host of the chalcidoid (Eucharidae) wasp *Orasema costaricensis* Wheeler & Wheeler (1937: 164-175). This endoparasite was originally discovered in the larvae of *Pheidole flavans* var.

The drawing of the soldier head was based on a specimen from Paramaribo.

### ***Pheidole camptostela* n. sp.**

(Figs. 7-10)

**Soldier** (holotype). Total length 3.7 mm; head capsule length 1.00 (0.95-1.03) mm; head width 0.96 (0.92-0.98) mm; scape length 0.70 (0.65-0.70) mm; Weber's length of thorax 0.95 (0.88-0.95) mm; hind femur length 0.83 (0.83-0.88) mm; hind tibia length 0.60 (0.60-0.62) mm; hind tarsus I length 0.70 (0.67-0.70) mm. Ferruginous; femora and tibiae slightly infuscated; tarsi pale testaceous; chewing border of mandibles, anterior margin of clypeus and gaster brownish black. Erect or suberect hairs very scarce except on gaster, their general distribution shown in Fig. 8 (on gaster, only fringing hairs are shown); note that scapes and femora and tibiae lack erect or oblique hairs. Apresed pubescence inconspicuous, scattered on head, petiole, post-petiole and gaster, denser on scapes and on femora and tibiae.

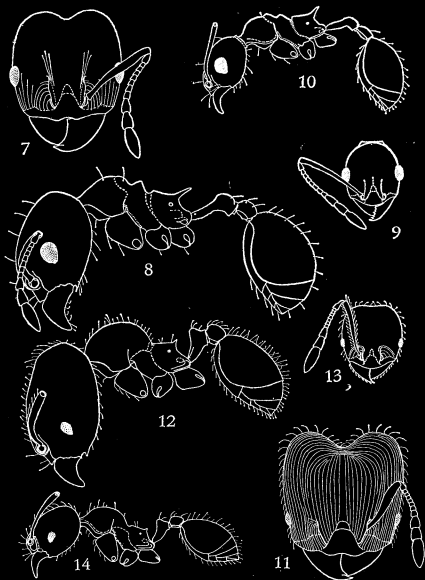
Head as shown in Fig. 7 and 8; little if any longer than broad behind eyes; sides convex, occiput rather deeply excised. Mandibles smooth and shining, with the basal portion of sides striato-rugose; chewing border with a long apical and a much shorter subapical tooth, the rest practically smooth or at best indistinctly denticulate. Anterior border of head sinuous, shallowly notched in the middle. Median apron of clypeus indistinctly sculptured and quite shining, lacking a sagittal keel. Frontal area impressed, shining. Frontal carinae narrow, slightly raised laterad, not covering completely the antennal socket when seen from above, subparallel, fading out at level of middle of eye; space comprised between frontal carinae less than one third of maximum head width. Antennal fossae deeply impressed. Paired

median gular teeth widely apart from each other and close to lateral ones, long and needle-like. Eyes relatively large, moderately convex, about 15 facets across the greatest diameter. Integument of head finely reticulate-punctate, opaque to subopaque on dorsum of head and on sides; this microsculpture becoming superficial or vestigial and the integument somewhat shining on front, tip of occipital lobes, posterior portions of sides of head; gular face faintly sculptured and highly shining. Longitudinal rugae on cheeks, inside of each frontal carina and prolonged for a short distance over the vertex; laterally on clypeus; arched rugae around antennal fossae. Antennal scapes gently curved at base, which is neither thickened nor unusually attenuate nor compressed, gradually thickening toward apex which, when scapes are laid back over the head as much as possible, do not quite attain the occipital border; funicular segments 2-8 at least slightly longer than broad; apical club (segments 9-11) longer than preceding segments combined.

Thorax as shown in Fig. 8; entirely reticulate-punctate and opaque. Pronotum with marked humeral tumuli, but much broader below across the antero-inferior corners than above across the humeri. Promesonotal suture at best vestigial above, scarcely impressed. Mesonotum with a deeply impressed transverse groove followed by a prominent transverse welt. Metanotal groove impressed. Basal face of epinotum with a pair of small tumuli in front, longitudinally shallowly excavate. Epinotal spines longer than one half of the length of basal face, very little raised towards apex nor diverging. Legs finely shagreened and subopaque. note that tarsus I of hind legs is longer than the respective tibia.

Petiole and postpetiole finely reticulate-punctate and opaque. Petiole (Fig. 8) with a long, depressed peduncle and a peculiar posterior low, trunk-shaped node, which is somewhat deflected downwards. Postpetiole subtrapezoidal to subglobose, a little broader than long, broadest behind middle. Gaster anteriorly feebly and narrowly truncate. Tergum I antero-mesially reticulate-punctate and subopaque, the microsculpture becoming superficial and faint laterad and caudad, and the integument quite shining. Remaining exposed parts of gaster only feebly reticulate and quite shining.

Worker (paratypes). Total length 2.5 mm; head capsule length 0.55-0.58 mm; head width behind eyes 0.42-0.45 mm; scape length 0.62-0.63 mm; Weber's length of thorax 0.75 mm; hind femur length 0.66-0.70 mm; hind tibia length 0.52-0.55 mm;



Figs. 7-10. *Pheidole camptostela* n. sp.: 7. soldier, head in full-face view; 8. soldier, body in profile; 9. worker, head in full-face view; 10. worker, body in profile. Figs. 11-14. *Pheidole borgmeieri* n. sp.: 11. soldier, head in full-face view; 12. soldier, body in profile; 13. worker, head in full-face view; 14. worker, body in profile. (Figs. 11-14 drawn to a larger scale than figs. 7-10) (Kempl del.)

hind tarsus I length 0.57-0.60 mm. Color and pilosity as in soldier, the latter shown in Fig. 10; in addition the head is somewhat more infuscated.

Head as shown in Figs. 9 and 10; distinctly longer than broad, the occipital half broadly rounded, the occipital flange visible in full-face view. Mandibles densely punctate and somewhat shining above, laterally striato-rugose; chewing border with long apical, shorter sub-apical tooth, and a series of about 8 small, sometimes indistinct, denticles. Anterior border of head greatly convex. Clypeus lacking a sagittal keel. Frontal area impressed. Frontal suture short, fading out at level of eyes. Frontal carinae narrow, parallel. Eyes conspicuously convex and protruding, with about 15 facets across the greatest diameter. Integument of head reticulate-punctate throughout, rather sharply on dorsum which is opaque, and more superficially on gular surface which is subopaque. A few faint longitudinal rugae on cheeks and on median apron of clypeus. Scapes thin, gradually thickening toward apex, very gently curved, at base, longer than maximum length of head. Funicular segments 2-8 a bit longer than broad, apical club longer than the preceding segments combined. Thorax, pedicel and gaster (Fig. 10) and legs as in soldier, except the following: mesonotal groove shallower; postpetiole longer than broad.

**Type s.** Brazil, Mato Grosso State: Utiriti, Rio Papagaio, November 12, 1966, K. Lenko & F. S. Pereira leg. 6 soldiers (holotype and paratypes) and 3 workers (paratypes) (MZUSP 4969); same locality and collectors, October 27, 1966, 8 soldiers, 4 workers (paratypes) (MZUSP 4745), all in my collection (WWK). More specimens of each series, cursorily examined, in the collection of the Museu de Zoologia da Universidade de São Paulo (MZUSP).

**Discussion.** The present species is a very close relative of the widespread and variable *radoszkowskii* Mayr, but differing at once in the peculiar shape of the petiole which bears a caudally deflected, low, trunk-shape node. Furthermore, the soldier of *camptostela* differs from *radoszkowskii* by having 4 standing setae on promesonotum, 2 on petiolar node; the epinotal spines are longer and more widely separated, the tergum I of gaster much shinier. The worker differs at once by its oval, elongate head, the longer epinotal spines, the narrow postpetiole, which is longer than broad.

***Pheidole borgmeieri* n. sp.**

(Figs. 11-14)

**Soldier** (holotype). Total length 2.8 mm; head capsule length 0.84 (0.80-0.85) mm; head width 0.80 (0.76-0.84) mm; scape length 0.39 (0.39-0.40) mm; Weber's length of thorax 0.72 (0.68-0.73) mm; hind femur length 0.49 (0.45-0.49) mm; hind tibia length 0.39 (0.38-0.39) mm; hind tarsus I length 0.34 (0.31-0.34) mm. Testaceous; head somewhat darker, with an elongated median dark brown spot on vertex, extending back to occipital excision; mandibles, basal half of scape, gaster, brown. Erect or oblique hairs abundant throughout (fringing hairs shown in Figs. 11-12); hairs on scape short and oblique; oblique to subappressed on extensor face of femora and tibiae; no appressed pubescence on gaster.

Head as shown in Figs. 11 and 12; longer than broad, broadest behind middle, sides convex; occipital lobes prominent and separated by a deep median excision. Mandibles smooth and shining, laterally striate on base; chewing border with distinct apical and subapical tooth, the rest practically edentate. Clypeus antero-mesially shallowly emarginate, its median apron smooth and shining, without a sagittal keel. Frontal area impressed, smooth. Frontal carinae narrow, diverging caudad, short, fading out at level of middle of eyes; space between posterior end of frontal carinae subequal to space between each carina and sides of head. Antennal fossae deeply impressed, the anterior border immarginate, with the customary arched rugulae around upper rim. Antennal scrobe absent (no change of sculpture nor any noticeable impression on head). Occipital excision prolonged forward to middle of head as a shallow vertical sulcus; not attaining the front proper. Eyes small, moderately convex, with no more than 8 facets across the greatest diameter. Three short, stout, median gular teeth present, the latero-mesial ones closer to laterals than to each other. Integument of head dorsum costate-rugose in the peculiar fashion shown in Fig. 11. The spaces between the rugae superficially to indistinctly reticulate, quite shining. Antennal scape short, its apex closer to posterior margin of eye than to the occipital border when laid back over the head as much as possible; gently curved and attenuate at base, gradually but not strongly thickening toward apex, smooth and shining with piligerous punctures. Funicular segments 2-8

rather broader than long; apical club (segments 9-11) together longer than the remainder of the funiculus.

Thorax as shown in Fig. 12; smooth and shining throughout; epinotum with the basal face superficially punctate, declivous face vestigially transversely rugulose. Promesonotum continuously and conspicuously vaulted in profile, with no trace of promesonotal suture on dorsum; humeri protruding but not tuberculate; pronotum as broad across the humeri as across the antero-inferior angle. Mesonotum lacking the transverse torus and welt, its posterior third strongly declivous in profile. Metanotal groove impressed. Basal face of epinotum as long as declivous face, lacking a distinct sagittal fosse. Epinotal spines minute, in the form of sharp denticles, connected at base by a transverse carinule. Legs smooth and shining. Hind tibia longer than hind tarsus I.

Petiole and postpetiole as shown in Fig. 12; both ventrally reticulate-punctate, dorsally smooth and shining. Petiolar node rounded above, not transversely excised on apex. Postpetiole broader than long, its sides convex to obtusely angulate a little in front of the middle. Gaster anteriorly subtruncate, its terga and sterna smooth and shining throughout.

Worker (paratypes). Total length 1.75 mm; head capsule length 0.43-0.46 mm; head width behind eyes 0.40-0.45 mm; scape length 0.38-0.39 mm; Weber's length of thorax 0.49-0.51 mm; hind femur length 0.37-0.38 mm; hind tibia length 0.28-0.31 mm; hind tarsus I length 0.23-0.26 mm. Testaceous; head and gaster light brown. Smooth and shining throughout, except for the vestigially striato-punctate lateral base of mandibles, the short rugulae on cheeks, the arched costulae around antennal socket, and the epinotum which bears the same vestigial sculpture as the soldier. Pilosity as in soldier.

Head as shown in Figs. 13 and 14; a little longer than broad, occipital border in full-face view slightly to moderately excised in the middle; occipital flange not protruding, invisible from above. Mandibles with distinct apical and subapical tooth, followed basad by a series of often unequal 7-9 small denticles. Eyes rather small, with no more than 7-8 facets across the greatest diameter. Antennal scape, when laid back over the head as much as possible, surpassing the occipital margin by a distance which exceeds its greatest width. Thorax, pedicel and gaster as shown in Fig. 14, similar to that of the soldier, but less thickset, the humeri scarcely marked; postpetiole broader than long with rounded sides.

**Types.** Brazil, São Paulo State, near Jucituba on São Paulo-Curitiba highway (BR-116, km 76) taken from sifted leaf-mold in woodland, October 1st, 1961, W. W. Kempf leg., 4 soldiers (holotype and paratypes) and 8 workers (paratypes) (WWK 4737); same locality and collector, August 8, 1960, 1 soldier and two workers (paratypes) (WWK 6977); Serra da Cantareira near São Paulo City, August 20, 1958, K. Lenko leg. 17 soldiers and 21 workers (MZUSP 634, 584) (paratypes, more specimens of this latter series, cursorily examined, in MZUSP). All in WWK and MZUSP.

**Discussion.** Due to its small size and general body structure, *borgmeieri* doubtless belongs to the *flavens*-group, but is at once distinct in the soldier caste by its peculiar sculpture of head dorsum, the smooth and shining thorax, the lack of an impressed or otherwise marked antennal scrobe. The worker is likewise distinct by its entirely smooth body; in Mayr's (1887) key it runs out with *subarmata* (and consequently also with *cornutula*), but differs in smaller size and the lack of superficial punctulae on mesopleura.

I take great pleasure in naming this species after Fr. Thomas Borgmeier as a birthday present.

### **Pheidole (Decapheidole) perpusilla Emery**

*Pheidole flavens perpusilla* Emery, 1894: 157 (Soldier, worker, female; Brazil, Pará State: Belém).  
*Pheidole perpusilla* Emery, 1896: 80 (nov. stat.).

Emery's first description of this form is rather summary because he considered it just a race of *flavens*. Only later (1896) he discovered the decisive difference in the number of antennal segments, moved it up to full specific rank, but did not add any more descriptive details. The given characters are however sufficient to discriminate *perpusilla* from the subsequently added species with 10 antennal segments (subgen. *Decapheidole*), viz. *decem*. Forel, 1901 and *zeteki* M. R. Smith, 1947.

The same characters apply to a small series of soldiers, workers and a female, taken by K. Lenko in the Município of Iporanga, São Paulo State, Brazil, November 1st, 1961 (MZUSP n. 4916). This discovery means a noteworthy extension of the range of the species.

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